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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,819

09/22/2006

Kouichi Takashima

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EXAMINER

CAO, PHAT X

ART UNIT

PAPER NUMBER

2814

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/593,819	<b>Applicant(s)</b> TAKASHIMA ET AL.	
	<b>Examiner</b> Phat X. Cao	<b>Art Unit</b> 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 6-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/22/06</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. Applicant's election of Group I (claims 1-5 and 9) in the reply filed on 3/3/08 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

#### ***Claim Objections***

2. Claim 2 is objected to because of the following informalities: line 2, "the surface roughness" should be changed to "a surface roughness" because of first mentioned. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, the limitation "wherein the depth of a defective portion is no greater than 2/3 of the thickness of said electrically insulating film" is unclear. It is unclear because if the insulating film has a defective portion then how can the defective portion be controlled in order to get the depth of the defective portion being no greater than 2/3 of its thickness?

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (2003-7895) - cited in IDS.

Regarding claims 1 and 9, JP ('895) discloses, in Fig. 3, a substrate for a semiconductor device, comprising: a base 22a made of aluminum and silicon carbide (see par. [0006] of translation); an electrically insulating film 31 formed on at least a portion of a surface of the base 22a; and a semiconductor element 14 bonded to the top of the electrically insulating film 31, wherein the electrically insulating film 31 includes plurality layers comprising a layer 23a of aluminum oxide and a layer 13a of silicon oxide ( see par. [0018] of translation).

JP ('895) does not disclose that the layer 23a and the layer 13a are made by one type of insulating film.

However, it has been held that selecting a known material on the basis of its suitability for the intended use is a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. There was absent evidence of disclosure of criticality for selecting insulating film including plural layers made of one type of insulating film as claimed. Therefore, it would have been obvious to have the layers 23a and 13a made of one type of insulating film by substituting layer 13a made of silicon oxide material with a layer

made of aluminum oxide material because of their equivalence for their use in the semiconductor art as the insulating materials and the selection of any of these known equivalents to be used as electrically insulating materials for the insulating layers 23a and 13a of JP ('895) would be within the level of ordinary skill in the art.

7. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP (2003-7895) in view of JP (9-107057) – cited in IDS.

JP ('895) does not disclose the base having the surface roughness in a range as claimed and the thickness of the insulating film being no smaller than the surface roughness.

However, JP ('057) teaches, in Figs. 3 and 4, a substrate for a semiconductor device comprising an insulating film 8 formed on a surface roughness of a metal base 3, the surface roughness of the base 3 is within a range of 0.2  $\mu\text{m}$  and 1.5  $\mu\text{m}$ . Accordingly, it would have been obvious to form the base of JP (895) having a surface roughness within a range as claimed and to have the thickness of the insulating film being no smaller than the surface roughness of the insulating film because such surface roughness is well known and commonly used for improving the adhesion and such thickness of the insulating film would provide more effectively in isolating the semiconductor element from the metal base.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phat X. Cao whose telephone number is 571-272-1703. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. X. C./  
Primary Examiner, Art Unit 2814

/Phat X Cao/  
Primary Examiner, Art Unit 2814

3/19/08